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OPERATIVE TREATMENT FOR THE CURE OF
VASCULAR NEVI.

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I DESIRE to make a preliminary report of a case of vascular nevus of the face, in which we have instituted operative measures for the cure of a condition that, while not painful, is annoying alike to the possessor and to the immediate friends. To be afflicted with a vascular growth, in the form of a telangiectasis, nævus flammeus, or angioma simplex, involving nearly one side of the face, means almost social ostracism. It is a source of constant mortification. The individual often becomes reticent, and avoids social intercourse because he is avoided by others. He prefers almost any other deformity to this; his mental suffering is intense, and he will submit to almost any form of treatment, however painful or prolonged, that he may be rid of what he almost considers a moral stigma. If the treatment fails his despondency increases; he feels himself a branded outcast. It seems strange that a deformity which in no way interferes with functional activity should usually so unfit the individual for the ordinary enjoyment of life.

¹ Read before the Missouri Valley Medical Society, at Council Bluffs, Iowa, September 20, 1894.



No amount of reason or moral suasion will give him peace of mind; nothing short of such physical means as will remove the hideous blemish.

One who has seen many of these cases and has been called upon to treat them will testify how difficult it is to achieve results satisfactory alike to his patient and to himself. The time-worn methods of caustics in their varied forms, while they frequently destroy the cutaneous vascularity, thereby removing the annoying color, leave a mass of cicatricial tissue, which, by its contraction, causes such distortion of the features that the exchange of a red or bluish blotch for the resulting deformity can hardly be called an improvement.

A careful microscopic examination discloses the fact that angioma simplex, which is by far the most common form, consists of an intricate, preëxistent, and newly-formed network of tortuous, frequently anastomosing, bloodvessels, somewhat larger than ordinary capillary vessels, containing at short intervals varicose dilatations, spindle and cylindric sacculi, with walls somewhat attenuated (Ziegler). We observe small vascular lobules located about the sweat-glands and hair-follicles (Billroth), constituting vascular districts, which coalesce, forming larger or smaller vascular areas. In the connective tissue, which has increased, and the intervascular spaces, are many lymphoid cells, single and in groups (Kaposi). We find this vascular growth usually occupying the rete mucosum and the corium, nearly always reaching and frequently occupying the subcutaneous cellular tissues, reaching as deeply as the hair-follicles and sweat-glands. This vascular network is composed of a surprisingly large number of bloodvessels, so that in artificially-injected sections (Ziegler) they are so numerous that the intervascular connective tissue seems exceedingly insignificant.

It will be seen that any caustic measures, to be effective, must destroy the entire thickness of the integument,

including a portion of the subcutaneous connective tissue, and cause a burn of the third degree. While this mode of treatment may be of service in small nevi, it becomes exceedingly objectionable in those large forms that extend over the greater part of one side of the face, on account of the resulting cicatricial contraction.

Such remedies as nitric acid, glacial acetic acid, solution of caustic potash, which have so long been popular, have been, as they should be, relegated into the forgotten past. Their action, while destructive to the tissues to which they were applied, usually effectually obliterates the cutaneous vascular supply, and cannot be limited to the affected tissues. The destructive action frequently extends to the facial muscles, and sometimes to the nerves, so that we have the effect of a facial paralysis. The vascular obliteration by means of subcutaneous injections of tincture of ferric chlorid or tincture of cantharides is dangerous on account of the risk of embolism, which in several instances has caused death (Van Harlingen, Holgate). Vaccination, so highly recommended, may be of service in nevi of limited size, but can be of little service in extensive affections. Of extensive linear scarification, while it has improved a number of my cases, I cannot say that the results have been satisfactory. The use of the Paquelin cautery, in the practice of others and in my own, has left linear cicatrices, which always remind one of the seamed face of the German duel-loving student, which in Germany may be considered a mark of bravery, but in this country might suggest the battle-scarred ruffian. With ligatures I have failed, and could hardly have expected to succeed when it is remembered that in rare instances only large arterial trunks communicate directly with the vascular growth. With injections of alcohol, as proposed by Holgate, I have had no experience, but they would seem to me to be open to the same objections as those of ferric chlorid. A solution of 8 per cent. corrosive sublimate in

collodion as a caustic has proved successful in small nevi, but in the large varieties has been almost a failure in my hands. Electrolysis has given me more satisfaction than any of the methods mentioned. The electrolytic action is entirely under the control of the operator. The destructive action of the needle can be checked in an instant. As large an area can be treated as is desirable or seems indicated. But in spite of the greatest care a streaked appearance of the nevus cannot be prevented. We cannot judge of the depth or the amount of the tissue involved by the vascular structure.

It occurred to me that if we could devise a method by which the entire structures involved by the vascular growth could be accurately and completely removed, and the cutaneous defect thus produced be so repaired as to prevent extensive cicatricial contraction, and to establish a normal color of the part, we should have found an ideal method. In the following case I have made an attempt to accomplish this end. While my experience has been limited, yet the results promise so much that I feel encouraged to continue work in this line, with the conviction that with increased experience we shall be able to record improved technique and better results.

M. B., twenty-four years of age, has always been well except for the diseases incident to childhood. She stated that from birth she had been afflicted with a "port-wine mark," possessing the same proportionate size throughout life. I found, on inspection, an area beginning in the left temporal region, extending along the margin of the lower eyelid toward and to the median line of the face, reaching as high as the brow, extending over the left side of the nose downward over one-half its surface, and involving the entire thickness of the upper lip. From the left angle of the mouth the line of demarcation extended with a downward curve upward to the temporal region. The color of this area was a reddish-purple

but all color disappeared on pressure. The margins of this discoloration appeared irregular and sharply defined, but on careful inspection faded rapidly into the normal cutaneous color—constituting what is ordinarily known as a *nævus vasculosus*, or an *angioma simplex*. The left side of the face was decidedly enlarged, particularly the left half of the upper lip. The alveolar mucous structure of the left half of the superior maxilla contained a vascular new-formation, soft, compressible, of a dark-purple color—a cavernous angioma.

On September 11, 1893, a solution of 8 per cent. corrosive sublimate in collodion was applied over the outer third of the nevus. In one week a slough exactly corresponding to the surface covered by the sublimate collodion film separated, leaving a granulating excavation, which rapidly filled and underwent epidermization in two weeks. Then the second third of the nevus underwent a similar process, and finally the remaining portion. A wedge was excised from the inner side of the lip, and the alveolar angioma was treated with galvanism by means of needle-punctures. The patient was discharged from the hospital with the hope that in time there would be capillary obliteration sufficient to change the nevus to the desired color. She returned in three months. The only improvement noted was a change from a purple hue to a dark pink. The patient had been very despondent, had secluded herself and despaired of ever being freed of her misfortune. The thought suggested itself, why not remove the entire abnormal growth with the knife, and immediately cover the defect with transplanted normal integument.

Accordingly, on March 12, 1894, under chloroform-anesthesia and strictly aseptic conditions, one-third of the affected integument was dissected away, cutting well into the subcutaneous tissues, so as to insure the entire removal of the growth. The left arm having been rendered aseptic, several Thiersch flaps were removed, of sufficient length and breadth to cover the facial defect,

except at the outermost angle, where, experimentally, a small portion of the affected skin was placed in order to note what changes, if any, would take place in it. The denuded surface having been entirely covered with Thiersch flaps, a thick coating of iodoform was applied, then a piece of perforated aseptic silk protective, then iodoform-gauze, a cotton pad, and a binder. This dressing was removed in forty-eight hours, and the wound was irrigated with sterilized water. All the flaps showed evidences of adhesion. A dressing was applied as before, and changed daily. In one week all flaps had become firmly adherent.

It was interesting to observe, from day to day, the changes that took place in the angiomatous graft which was placed at the outer angle of the wound. In forty-eight hours it had become adherent; its color was of a darker shade, and it seemed thicker. It grew darker and thicker from day to day, until the tenth day, when it had assumed a dark-purple hue. It was compressible, but immediately became swollen again when pressure was removed. The graft was then removed with a knife, and it was found to have become firmly adherent. Vascular communication had become established. The graft was found to have become a cavernous angioma.

On this day a second section of integument was removed and covered with Thiersch flaps, and dressed as before. The upper end of one flap, under the margin of the eye, became detached during the first dressing, and this sloughed, and the wound healed by granulation.

Two weeks later the last third of the nevus was dissected away. Considerable difficulty was experienced in removing the integument about the inner canthus and between this point and the brow. The skin was not very thick at this point, so that there was danger of injuring the canaliculi. Thiersch flaps were used as before, and became rapidly adherent. It was now found that at the point where one of the flaps which had been placed with one end against the denuded lower lid, and

had been detached accidentally during the first dressing, and later sloughed, the wound healing by granulation, contraction had taken place and everted the inner third of the lower lid, requiring a second denudation and flap.

I must confess that it may be too early to judge of the result at the present time; still the appearance of the site of the old nevus is such as to be in every way encouraging. The appearance is identical with that observed in other cases in which flap-transplantation was employed after the removal of other forms of neoplasm and in granulating surfaces after burns, the skin becoming in the course of time of a normal appearance. In the case under consideration there remains no trace of nevoid structure, the whole surface is gradually becoming of a lighter shade, and the only discoloration remaining is of a pinkish hue, as I have invariably found in transplanted skin of recent date.

The method pursued in this case seems rational and promising, because, first, we remove the entire nevoid structure, and, secondly, because the defect is covered with integument of a normal character. It is like the removal of sod, poor with wire grass, from a lawn and replacing it with a new blue-grass sod, which is more pleasing in appearance. The immediate transplantation of skin-flaps prevents the contractions and the consequent deformity seen so constantly after such methods as cauterizations of every description. The wound-repair is prompt, rapid, and painless.

The removal of the nevoid structure should be as rapid as consistent with good work, as the hemorrhage is likely to be profuse. A slow and tedious dissection might entail such a loss of blood as to be harmful; cut away rapidly, swabbing just enough to enable you to see that you are beneath the vascular zone. Have artery-clamps lying near, in order that no time may be lost in catching spurting points. When denudation is complete, and all bleeding points tied, apply a thick wad of iodoform-gauze, and direct an assistant to make firm

pressure while you uncover the previously disinfected arm, which, meanwhile, has been wrapped in a sublimate towel. Then with your razor, ground flat on one side and concave on the other, you carefully remove a flap of skin, your left hand having grasped the arm in such a manner as to make the skin tense. This skin-flap may be from four to six inches long, and from one to one and one-half inches wide, and of a thickness reaching into the papillæ. As you cut, the flap will shrink together on the concave side of the razor. When long enough, detach it from the skin. Remove the gauze pad, spread the flap on the denuded surface, and tease it into place with a probe and grooved director. Avoid thumb-forceps, as you may bruise the flap and destroy its vitality. It will be found that the flap has contracted nearly one-half; therefore it is necessary to cut flaps nearly twice as large as desired. A sufficient number of flaps are used to entirely cover every part of the vivified surface. Use extreme care about the lower lid; be very liberal with the flap, exercise every precaution so that the edge of the flap be not turned under, as in this case it would fail to adhere. If the flap should fail to adhere at this point, or is accidentally torn off with the dressing, immediately apply a new graft, in order that healing by granulation, with consequent contraction and eversion of the lower lid may be prevented—a deformity quite as undesirable as the nevus itself.

Every antiseptic precaution must be observed to obtain the best result. The surface to be operated upon must be rendered aseptic, and the operator's hands, sponges, instruments, especially the razor, must be rendered aseptic. The arm, or rather the portion of the body from which the flaps are removed, must be given the same careful attention. The field of operation must be carefully surrounded with sublimated towels, and an aseptic cap applied to the head. If we are surgically clean, the transplanted flaps are almost certain to adhere. If any detail is overlooked, we are almost certain to fail.

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